

**Summary of Meeting
CALFED Bay-Delta Program Levee and Channel Technical Team
April 8, 1998**

Key Discussion Items:

- Seismic risk assessment of the Delta was discussed.
- The status of the progress on the CALFED PL 84-99 Levee Upgrade cost estimate analysis was discussed.
- Channel scour/sedimentation and permit coordination issues were briefly discussed.
- An example for merging ecosystem restoration and levee reconstruction issues was presented for feedback.
- A subsidence sub-team was assembled.

Action Items:

- The results of the work by the Seismic Risk Assessment sub-team should be available by May 1998 according to Ralph Torres. A presentation was made by seismic expert Norm Abrahamsom. Two models (the Lettis and CRCV) were used for estimating seismic risk in the Delta. A contour map of seismic hazard was presented that uses the average of the two models.
- The consulting firms of Murray Burns and Kienlen and Kjeldsen Sinnock and Neudeck will assemble detailed cost estimates for PL 84-99 levee upgrades on about 30 Delta islands as a cooperative team effort. Gil Cosio and Chris Neudeck will oversee the work. There was concern that project levees in the south Delta should be looked at too because they tend to fail short of design capacity.
- Gwen Knittweis and Michael Ramsbotham presented permit coordination/streamlining and channel scour/sedimentation topics, respectively. Gwen referred to work that Frank Wernette from Fish and Game is doing that will coordinate/streamline the permitting process for all permits and not just for the levee group. Michael referred to prior reports on sedimentation and scour monitoring as well as latest updates. The monitoring is related to the State Water Project and there was concern that additional monitoring in other sites is necessary as part of the CALFED process.
- Dick Daniel presented an example of merging ecosystem restoration and levee reconstruction issues by purchasing a Delta island and breaching the levees to convert it to wetlands. The McCormack-Williamson site is actually in negotiations at present for the sale. It is unclear which agency would maintain the chosen site after the project is completed and no agencies have stepped forward to volunteer. The idea is being presented as a concept for feedback.
- A subsidence sub-team was assembled consisting of 6 members of the Tech Team in attendance and 2 members not in attendance. The first meeting of the reconvened subsidence sub-team was scheduled for April 28, 1998 from 1:30 to 3:30 pm.
- The next meeting of the CALFED Levee and Channel Technical Team will be on May 11, 1998 from 1-4 in room 1142 of the Resources Building.

Draft Meeting Notes
CALFED Bay-Delta Program Levee and Channel Technical Team
April 8, 1998 at 9:00 am in room 1142 of the Resources Building

Attendance List:

Norm Abrahamson, Private Consultant
Margit Aramburu, Delta Protection Commission
Bill Betchart, Private Consultant
John Cain, Natural Heritage Institute
Lori Clamarro, Delta Protection Commission
Bob Clark, Central Calif Flood Control Association / North Delta Water Agency
Rob Cooke, CALFED (chair)
Gilbert Cosio, Murray Burns and Kienlen
Ray Costa, Kleinfelder Consultants
Mark Cowin, CALFED
Dick Daniel, CALFED
Mike Driller, DWR
Paul Forsberg, Fish and Game
Dave Gore, US Bureau of Reclamation
Alex Hildebrand, South Delta Water Agency
Chuck Howard, US Bureau of Reclamation
Kenneth King, Private Consultant
Gwen Knittweis, CALFED
Gil Labrie, DCC Engineering
G. Fred Lee, G. Fred Lee and Associates
Bill Lettis, Bill Lettis and Associates
Roger Leventhal, Levine, Fricke, Rewn Inc
BJ Miller, San Luis and Delta Mendota Water Authorities
Chris Neudeck, Kjeldsen Sinnock and Neudeck Inc
Michael Norris, DWR Central District (minutes)
Lynn O'Leary, Corps of Engineers / CALFED
Michael Ramsbotham, Corps of Engineers / CALFED
Gary Tilkian, Metropolitan Water District Southern California
Ralph Torres, DWR
Frank Wernette, Fish and Game
Tom Zuckerman, Central Delta Water Agency

Rob Cooke convened the meeting. The meeting minutes from 2-4-98 CALFED Levee and Channel meeting were reviewed and approved by the group with no comments.

Ralph Torres gave a seismic assessment update and passed out a summary handout. On a separate matter, Ralph reported that there was a major repair on a 2,000-foot section of the aqueduct near Gustine. Ralph gave dates of 4-17-98 and 5-1-98 for assembling the seismic package and forwarding the package to the review board, respectively. At the next levee and channel tech team meeting, the seismicity package will be presented to the Tech Team. The report will include a discussion of damage reduction measures and emergency response. Ralph turned the meeting over to guest Norm Abrahamson who is a seismic expert. Norm discussed Probabilistic Seismic Hazard Analysis and Attenuation Relation topics. There were graphs of the seismic stability of Delta levees that showed clusters of earthquakes and Margit Aramburu asked about a cluster on the Greenville Fault which includes Delta islands west of Stockton. Norm discussed that the Lettis Delta Fault Model and the CRCV Source Models were the two models that were used. There were graphs that showed the attenuation relation for deep soil sites. Tom Zuckerman asked about the attenuation relation and Norm explained that the graphs are site specific but the attenuation relations were generic. The two models didn't make much difference according to one graph for the Sherman-Terminus site. Other good handouts included Figures 3a and 9b. Figure 3a showed that more frequent small earthquakes are driving the hazard on the Lettis model. Figure 9b showed a contour map of the seismic hazard which was based on an average of the two models. Margit asked if the study could be extended southward beyond the Delta and Norm referred to seismic mapping by California Division of Mines and Geology (CDMG) and Chuck Howard referred to a USBR study. Ralph Torres said seismic studies have been done on the project facilities southward. Ralph summarized by saying that the study of the Delta is a tremendous undertaking and the presentation to the group is meant to focus on only the Delta. Ralph also briefly discussed "deterministic" vs "probabilistic" analyses methods.

Alex Hildebrand discussed how CALFED Alternative 2 (the through-Delta alternative) should be redone to bring flows from the South Fork of the Mokelumne River rather than the north fork because one would be picking up less bromides and also because Figure 9b was showing less seismic risk for the alternate route.

Bill Betchart asked if Figure 2a could be used in the design of structures to find the probability of getting a certain earthquake in a certain number of years.

Tom Zuckerman and BJ Miller discussed how the design of the Delta for seismic hazards should be the same type of design as the rest of the aqueduct system so that one is comparing apples and apples. Bill Betchart noted that if the aqueduct is safe for a 1g quake and the Delta is safe for a 2g quake, then that would satisfy Tom's concern. Ralph Torres noted the issue is more complicated than that and he doesn't see how the different water systems can be compared although it is an important issue. Tom summarized by noting that "the chain is only as strong as its weakest link" and the issue could mean that one would endorse increasing groundwater or offstream storage if it was concluded that the Delta or the conveyance system was indeed vulnerable.

Chuck Howard asked Norm about data on strong motion in the Delta. Norm said the graphs are

showing the conditions at the base of the peats so a lot of data for ground motion wouldn't change the graphs. However, ground motion data could be used to calibrate ground attenuation.

The permit coordination agenda item was presented by Gwen Knittweis. Gwen said that Frank Wernette is actively working on the topic. Frank said he's pursuing permit coordination/streamlining for all the processes and not for just the levee and channel group. Margit suggested a regional approach for the process. Frank agreed and said the work he is doing will have to be tailored by area.

Alex discussed problems with dredging permits where the fish agencies have veto authority over the permits unless the farmers install fish screens. Unfortunately, no one knows how to install the screens for this type of action.

Gil Cosio noted the Corps of Engineers won't make the Reclamation Districts go through the 404 process for levee upgrades up to the PL-99 standard.

The cost estimate agenda item was presented by Gil Cosio. Gil said the work will be a team effort between the consulting firms of Murray, Burns, and Kienlen and Kjeldsen, Sinnock, and Neudeck. Gil said a total of probably 30 islands will be done for detailed cost estimates. Michael Norris asked if the cost estimates will look at the costs of fixing home encroachments on levees such as what occurs on Bethel Island and Gil said yes it would. Alex asked about the project levees in the south area which are not built as well as the levees on the Sacramento River system and would fail before they reach their design capacity. Alex felt the cost estimate work should include looking at which Corps levees aren't that good in the south area and where the levees are likely to fail.

Lynn O'Leary said she hoped the levees on the San Joaquin system were designed to at least a 1.2 level Factor of Safety. Chris Neudeck said the seepage repair work on RD17 was just bringing the levee back up to a 1.3 level Factor of Safety. Chris said the Corps seepage repair is \$2.5 million per mile. Alex said the San Joaquin River levees fail at 40,000 cfs and not the 52,000 cfs they were designed to meet. Gil and Lynn briefly discussed the Corps Phase IV work which should bring the Sacramento River system back up to PL-99 standard. Michael Ramsbotham referred to a handout on Disaster Assistance Overview in response to all the questions he was hearing on the PL 84-99 standard.

The sedimentation/scour monitoring agenda item was presented by Michael Ramsbotham. Michael referred to past DWR reports as well as a handout discussing the issue. Chris noted the reports give one a "percent change in cross section" and not whether it is the left or right bank. Michael indicated that this data also included full cross-sections. Alex noted the channels in his area are being plugged up and there's no monitoring being done there. It was acknowledged that the location of the sites shown were related to the State Water Project. John Cain asked if additional monitoring could be done as part of the CALFED process. Michael referred to a Historic Sediment Loads in the Sacramento-San Joaquin Delta report and said he can provide copies to those who want one.

The integration of ecosystem restoration and levee reconstruction agenda item was presented by Dick Daniel. Dick began by saying it would be a nontechnical talk. Dick said negotiations are underway to purchase a Delta island (McCormack-Williamson) for restoration of wetlands. The levees on the island would be breached and the island would be flooded. However, various agencies have not stepped forward to manage the area after it is converted to wetlands because of liability issues. Margit said there's a similar model in the Sonoma Baylands to mitigate for the Clapper Rail. Dick said the Ecosystem Restoration Program could provide the "enhancement" component of the levee program. The biggest liability according to Dick is the maintenance of the exterior levee. Also, it's better to have one owner responsible for a project like the one he is envisioning. The proposed project is being presented as a concept and Dick is awaiting feedback.

Paul Forsberg said that environmental enhancement requirements for Assembly Bill 360 are being assembled by Fish and Game.

Rob assembled a "subsidence sub-team" to get that issue back on track. Rob said the team would focus on subsidence issues as they relate to levee integrity (the proposed buffer zones) but could also look at other questions in response to a question from John Cain. The team consists of Margit Aramburu, Chris Neudeck, Michael Ramsbotham, Chuck Howard, John Cain, and Lynn O'Leary. Also, Curt Schmutte and Steve Deverel were added to the list although they were not in attendance at the meeting. Rob scheduled the next meeting of the subsidence sub-team for Tuesday April 28, 1998 in the Resources Building from 1:30 to 3:30 pm.

Rob scheduled the next meeting of the CALFED Levee and Channel Technical Team for Monday May 11, 1998 from 1- 4pm in room 1142.

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